

# Innovative Biotechnology Firm Specializing in Lignocellulosic Waste-to-Green Energy Solutions

## Summary

Profile type	Company's country	POD reference
<b>Technology offer</b>	<b>Türkiye</b>	<b>TOTR20241030004</b>
Profile status	Type of partnership	Targeted countries
<b>PUBLISHED</b>	<b>Commercial agreement with technical assistance</b>	<b>• World</b>
Contact Person	Term of validity	Last update
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## General Information

### Short summary

The company is an innovative biotechnology company dedicated to providing sustainable solutions for industrial waste conversion into renewable energy. Its core technology integrates mechanical and biological pretreatment processes to transform lignocellulosic biomass, such as paper waste, agricultural, and forestry residues, into valuable biogas and biomethane. By utilizing enzyme-producing microorganisms for in-situ enzyme production, our approach significantly reduces costs and energy consumption.

### Full description

The company is a pioneering biotechnology company specializing in converting industrial waste into renewable energy, with a focus on solving critical challenges in biogas and biomethane production from lignocellulosic biomass. As the demand for sustainable clean energy increases, the need for efficient feedstock conversion becomes more urgent, particularly for lignocellulosic biomass. While these materials, such as paper sludge waste from the paper and pulp factories, and agricultural residues like corn stover or wheat straw, are rich in carbon, their crystalline cellulose structure makes them difficult to process efficiently using existing methods, which are energy-intensive and costly. The biotechnology company offers an innovative patented solution by integrating mechanical and biological pretreatment processes to significantly improve the conversion of lignocellulosic biomass into biogas and biomethane. Their approach employs live, enzyme-producing microorganisms that enable in-situ enzyme production,

eliminating the need for costly pure enzyme applications. Additionally, their mechanical process operates at a dry matter content of 20-30%, allowing for a reactor volume reduction of up to six times compared to traditional enzymatic hydrolysis, which typically runs at 1-5% dry matter content. This results in lower initial investment and operational costs, while enhancing sustainability and energy efficiency.

Having already demonstrated success in processing paper waste sludge from the pulp and paper industry, they are now adapting their technology to other lignocellulosic waste streams, including agricultural and forestry residues. The biotechnology company's technology offers a significant competitive advantage in the sector by providing a more cost-effective, energy-efficient alternative to traditional methods, addressing both environmental and economic concerns for biogas facilities.

The ability to effectively apply the technology across different geographical regions and various types of lignocellulosic biomass presents a significant market potential. Their project's target market is the rapidly growing renewable energy sector in Europe, America, and Asia, with a particular focus on biogas production. In line with the European Union's goal to increase biogas production by 2030, there is a growing demand for technologies that enhance biomethane production efficiency. As they scale their technology for industrial application, they are actively seeking strategic partnerships to extend its use across different industries and geographical markets. Their solution is poised to revolutionize renewable energy production by offering a more sustainable, efficient, and economically viable approach to biogas and biomethane generation.

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### Advantages and innovations

The technology offers an innovative approach that integrates biomass and waste management with energy production, in line with the principles of clean and circular economy. With the developed pre-treatment technology, lignocellulosic biomass becomes a high-efficiency raw material for facilities producing biogas and biomethane. This technology directly contributes to key goals such as improving biogas production processes, converting lignocellulosic biomass into renewable energy, and upgrading biogas to more valuable fuels (biomethane, BioLNG, etc.).

With this technology; paper waste sludge from the pulp and paper industry, agricultural and forest waste, which are valuable raw materials for biogas and biomethane producers, can be efficiently utilized in the biogas production process without harming land life and biodiversity. Due to the challenges posed by the structure of cellulosic biomass, there is a loss of efficiency in biogas production, which reduces the economic competitiveness of biogas produced from lignocellulosic biomass. The developed technology overcomes these challenges by optimizing the pre-treatment process before biogas production.

In studies conducted with paper sludge, it has been found that the biomethane yield per unit volatile solid of waste can be increased by 104.9%. This rate can vary depending on several parameters, such as the process by which the paper sludge was generated and the specific paper mill it came from. Since paper sludge is obtained from cellulose-based pulp or recycled paper during paper production processes, it has been chemically processed beforehand, resulting in shorter fiber lengths and making it more easily digestible compared to agricultural waste. The increase in biomethane potential for agricultural waste is approximately 25%. This rate may vary based on the cellulose and lignin composition of the agricultural waste.

### Technical specification or expertise sought

The company is seeking a partner with a robust network of biogas and biomethane producers across Europe. The ideal partner would be engaged in biogas production, project development, or the distribution of biogas solutions technology. This partner should possess extensive expertise in the biogas production process, including a thorough understanding of the industry's challenges and pain points. Additionally, experience in the effective scaling and commercialization of biogas technologies would be highly advantageous. They aim to collaborate with a partner who can actively promote and implement our technology in biogas plants, significantly enhancing operational efficiency and sustainability. This partnership is expected to accelerate their growth and increase their technology's adoption in key markets.

### Stage of development

**Available for demonstration**

IPR Status

**IPR granted**

IPR Notes

### Sustainable Development goals

• **Goal 7: Affordable and Clean Energy**

## Partner Sought

#### Expected role of the partner

Investor: Provide financial investment to help us scale our technology and expand globally. This support will cover operational costs and further development of our technology. Market Access and Expansion: Use their network to help them enter new markets in Europe and the USA, identifying opportunities for their technology in biogas and biomethane production facilities. Implementation Support: Assist with the technical aspects of installing and adapting their technology in existing operations, ensuring it fits various production scales. Promotion and Advocacy: Help promote their technology in the industry, enhancing their visibility and credibility through industry events and other promotional efforts. Feedback and Development: Provide feedback on their technology based on their experience and market needs, helping them improve and adapt their offerings. Regulatory Guidance: Help navigate different regulatory environments to ensure their technology meets local standards and regulations.

#### Type of partnership

**Commercial agreement with technical assistance**

#### Type and size of the partner

- **Big company**
- **SME <=10**
- **SME 11-49**
- **SME 50 - 249**

## Dissemination

#### Technology keywords

- **03004001 - Agro chemicals**

#### Market keywords

- **06007001 - Other energy production**

#### Targeted countries

- **World**

#### Sector groups involved

- **Renewable Energy**